BIO DYANAMIC AGRICULTURE

INTRODUCTION:

❖Biodynamic farming was introduced by **Rudolf Steiner** (the late Australian philosopher, architect, playwright, educator, and anthroposophist) and develope in popularity since **1922.**

❖ In 1924, the bio-dynamic movement went under way from lectures given by Rudolf Steiner in Koberwitz, Poland.

❖Biodynamic farming (means biological dynamics) is a method of organic agriculture that considers farm as a living system where one activity is affected by the other.

❖ The term biodynamic has been derived from the Greek term bios meaning life and dynamic meaning energy. Hence, biodynamic farming indicates working with energies that create and maintain life.

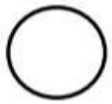
Principles of Biodynamics:

➢Bio-dynamics is ecologically oriented on a wider scope and includes **sun, moon, planets, subterranean features, and mental factor**s.

➢ All natural things of the world are formed by the transformation and intimate combinations of four elements that **include fire, earth, water, and air.**

1) **Harvesting Cosmic Forces:** Cosmic and earthly forces influence plant growth: Moon, Mercury, and Venus infuse the earth from above, while Mars, Jupiter, and Saturn energize from below. Their interaction in the clay region creates rhythmic cycles vital for plants. Understanding these rhythms helps optimize agricultural activities like **soil preparation, sowing, and harvesting.**

2) **Biodynamic Calendar:** If agricultural practices are performed as per constellation, they prove to be more effective and beneficial as each constellation has dominant elemental effects.
3) **Biodynamic farming** restores the humus status of soil ecosystem to retain its fertility and productivity.

ராசிகள்			ராசிக்குரிய பயிர்	உதாரணங்கள்
 ♈ மேஷம்	 ♌ சிம்மம்	 ♐ தனுசு	 பழம்/விதை	நெல், எள்ளு, கொய்யா, வாழை, நிலக்கடலை, தானியங்கள் போன்றவை
 ♉ ரிஷபம்	 ♍ கன்னி	 ♑ மகரம்	 வேர்	மரவள்ளி, சேனைக் கிழங்கு, கருணைக் கிழங்கு, கேரட், பீட்ரூட், மஞ்சள், இஞ்சி போன்று மண்ணுக்கு கீழே விளைபவை
 ♊ மிதுனம்	 ♎ துலாம்	 ♒ கும்பம்	 பூ	ரோஜா, மல்லி, சம்பங்கி, காளி பிளவர் போன்றவை
 ♋ கடகம்	 ♏ விருச்சிகம்	 ♓ மீனம்	 இலை/தண்டு	கீரை, கரும்பு, நிழல் தரும் மரங்கள் போன்றவை
குறிப்பிடக்கூடிய தினங்கள்				
சந்திரன் எதிர் சனி			குறிப்பிட்ட நேரத்திற்கு முன்பாக உள்ள 48இல் இருந்து 24 மணி நேரம் வரை அனைத்து விவசாய வேலைகளையும் செய்யலாம். அதிகாலையில் BD501 (கொம்பு சிலிக்கா) தெளிக்கலாம்.	
அமாவாசை			விதை சேகரிப்பு, மரம் வெட்டுதல், நிலம் வழி உரம் கொடுப்பது மட்டும் செய்யலாம்.	
பௌர்ணமி			திரவ உரம், பஞ்சகாவ்யம் தெளித்தல், BD501 (கொம்பு சிலிக்கா), CPP (சாண மூலிகை உரம்) தெளிக்கலாம்	

குறியீடுகளும், அதற்கான விளக்கங்களும்	
 உச்சநிலவு	மேல்நோக்கு நாள் நிறைவுற்று கீழ்நோக்கு நாள் துவங்குகிறது.
↘ கீழ்நோக்கு நாள்	பெரும்பாலும் மண்ணுக்கு கீழே செய்யக்கூடிய வேலைகள். பதியம் போடுதல், நாற்று நடுதல், களை வெட்டுதல், நிலத்தில் உரம் இடுதல், உழவு செய்தல், கிழங்குகளை அறுவடை செய்தல், BD500 (கொம்பு சாணம்) தெளித்தல்.
↕ நாட்கள் மாறுகிறது	கீழ்நோக்கு நாள் நிறைவுற்று மேல்நோக்கு நாள் (அ) மேல்நோக்கு நாள் நிறைவுற்று கீழ்நோக்கு நாள் துவங்குகிறது
 தாழ்நிலவு	கீழ்நோக்கு நாள் நிறைவுற்று மேல்நோக்கு நாள் துவங்குகிறது.
↗ மேல்நோக்கு நாள்	பெரும்பாலும் மண்ணுக்கு மேலே செய்யக்கூடிய வேலைகள். நாற்றுகளுக்கு விதை விடுதல், நேரடி விதை விதைத்தல், இலை வழி உரம் தெளித்தல், பழங்களை அறுவடை செய்தல், பஞ்சகாவ்யம் தெளித்தல், BD501 (கொம்பு சிலிக்கா) தெளித்தல்.
⊙ சூரியன்	சூரியன் ராசியில் நுழையும் நேரம், கதிர் திருப்பநாட்கள், பகலிரவு சமநாட்கள் கொடுக்கப்பட்டு உள்ளது.

தவிர்க்கவேண்டிய நாட்கள்		
ஏறு நோடு/ இறங்கு நோடு		குறிப்பிட்ட நேரத்திற்கு முன்பாக உள்ள 6 மணி நேரத்திலும், பின்பாக உள்ள 6 மணி நேரத்திலும் விவசாய வேலைகளையும் தவிர்த்து விடவும். மொத்தம் 12 மணி நேரம்.
அபோஜி	Ag	குறிப்பிட்ட நேரத்திற்கு முன்பாக உள்ள 12 மணி நேரத்திலும், பின்பாக உள்ள 12 மணி நேரத்திலும் விவசாய வேலைகளையும் தவிர்த்து விடவும். மொத்தம் 24 மணி நேரம். உருளைக்கிழங்கு நடவு செய்யலாம். பூ அல்லது பழத்திற்கு உண்டான நாளாக இருந்தால் அந்நாளில் அவற்றை நடவு செய்யலாம் . பழம் அறுவடை செய்யலாம். இலை அல்லது வேருக்கு உண்டான நாளாக இருந்தால் தவிர்த்துவிடவும்.
பெரிஜி	Pg	குறிப்பிட்ட நேரத்திற்கு முன்பாக உள்ள 12 மணி நேரத்திலும், பின்பாக உள்ள 12 மணி நேரத்திலும் விவசாய வேலைகளையும் தவிர்த்து விடவும். மொத்தம் 24 மணி நேரம்.

4) Soil is a living system wherein the microbes can be fully established and maintained, thus, biodynamic farming also restores the soil for a balanced functioning of **flora and fauna**,

5) A plant grows under the influence of abiotic factors (like temperature oxygen, CO2,light, water, etc) thus biodynamic farming involve the application of these factors to soil,life and health. These energies are transformed in the plant systems by photosynthesis into chemically active energies.

6) Biodynamic farming considers a plant as living entity consisting of mineral elements (like N. P. K. Ca, Mg. Cl, Fe, etc.) and organic matter (lied proteins, carbohydrates cellulose, and starch)

7) Biodynamic farming gives importance to enzymes and growth substances.

8) It follows proper crop rotation in which soil exhausting crops are cultivated alternatively with fertility restoring crops to restore soil fertility.

9) It also restores the soil environmental conditions, forests, wind protection, and water regulation.

1**0)** It maintains the soil structure, i.e., the physical characters (like, bulk density. pore space, water holding capacity, and texture).

Characteristics of Bio-Dynamic forming:

It consists of two characteristics,

❖**Firstly,** It allows inputs from various herbal,mineral and manual raw material to be processed in complex ways and applied in small doses on soil and crops

❖**Secondly,** It observes rhythms in nature that go beyond the influences of sun , weather and season but include lunar,planetary and stellar constellations

BIODYNAMIC PREPARATIONS:

To aid fertilization,steiner recommended the use of eight preparations are discussed below,

❖ Field preparations (500&501)

❖Compost Preparations (502-507)

I. FIELD PREPARATIONS:

1)Field Preparation for Stimulating Humus Formation - Preparation 500 (Horn Manure)

➢To make 500 (Horn Manure), cow manure is packed into the horns of 9 cows. The horns are then buried 46-69 cm deep in fertile soil during autumn and left there to decompose over the winter. The horns are dug up in spring (March-April) during the descending moon phase. Afterward, they are stored in cool earthen pots. This process is believed to help the manure absorb life energy from the earth, promoting the formation of humus.

2)Preparation 501 (Horn Silica):

➢It is crushed powdered quartz prepared by stuffing in a cow horn, burying into the ground in spring, and taking out in autumn . It can be mixed with preparation 500, but it is generally prepared on its own (1 tablespoon of quartz powder is mixed in 250 litres of water) During the wet season, this mixture is sprayed under low pressure over the crops to prevent fungal diseases. It should be sprayed on an overcast day or early in the morning to prevent the leaves from burning.

II. Compost Preparations (502-507),

Composting is the process of combining organic materials to make a high-quality natural fertilizer.

1. **Yarrow Preparation 502:**

- Yarrow flowers are placed inside the bladder of a red deer. The bladder is then left in the sun during summer and buried in the earth during winter.
- It is dug up in spring. This preparation helps activate beneficial bacteria, strengthens plants, especially their flowers and fruits, and protects them from pests.

2. **Chamomile Preparation 503:**

- Chamomile flowers are placed inside the small intestine of cattle. The intestine is buried in nutrient-rich soil in autumn and dug up in spring. This helps improve plant health.

3. Stinging Nettle Preparation 504:

- Fully bloomed stinging nettle plants are packed underground and surrounded by peat for a year. This helps to improve the soil and promote plant growth.

4. Oak Bark Preparation 505:

- Oak bark is chopped into small pieces and placed inside the skull of a domesticated animal.
- The skull is then surrounded by peat and buried in a place where rainwater flows.
- This preparation helps enhance the soil's vitality.

5. Dandelion Preparation 506:

➢Dandelion flowers are placed inside the abdomen of cattle, which is then buried in the earth during winter and dug up in spring.

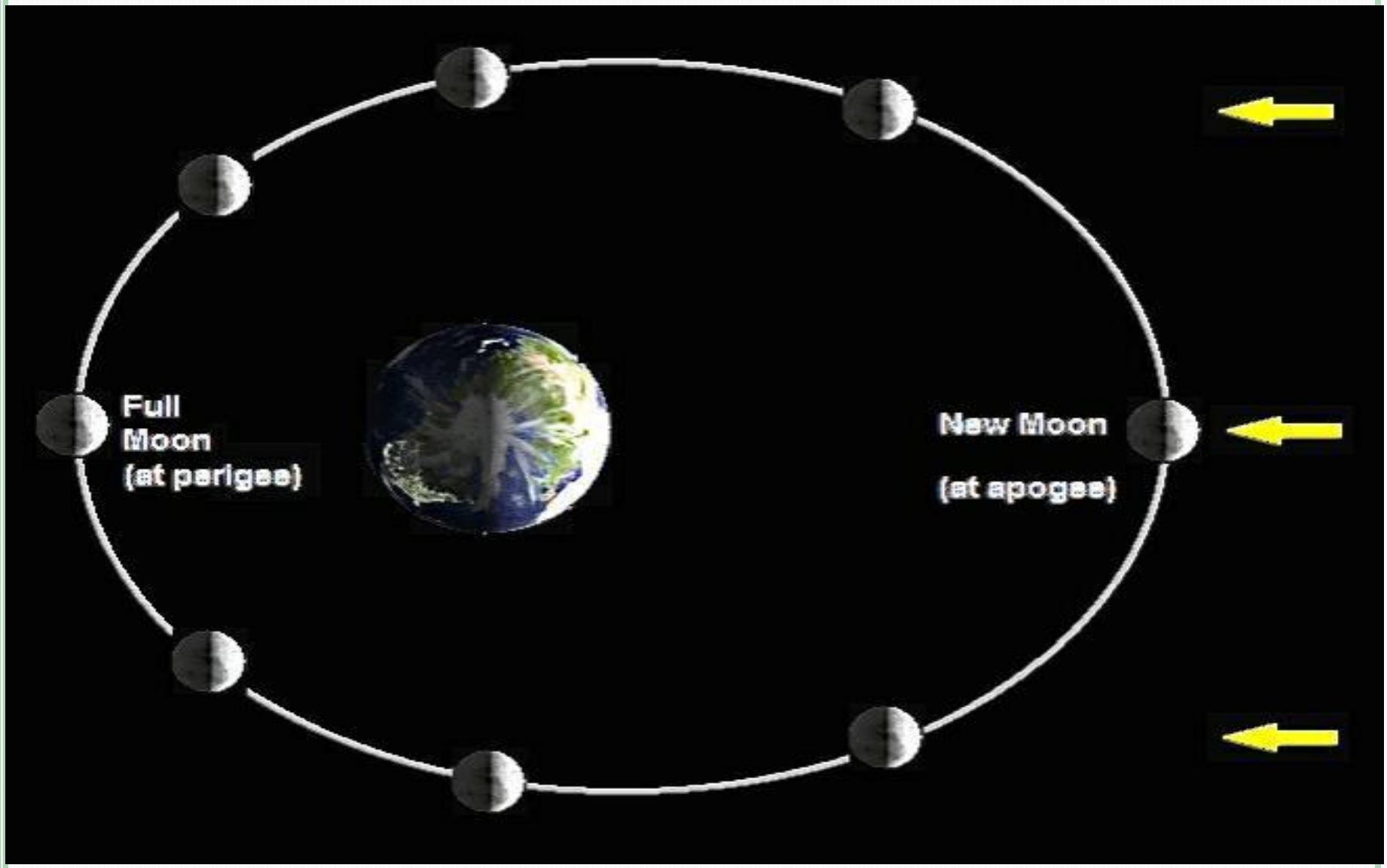
➢ This helps improve soil quality and plant growth.

6. Valerian Preparation 507:

➢ Valerian flowers are soaked in water to make a preparation that supports plant health and strengthens the soil.

Lunar Effects on Plant Growth:

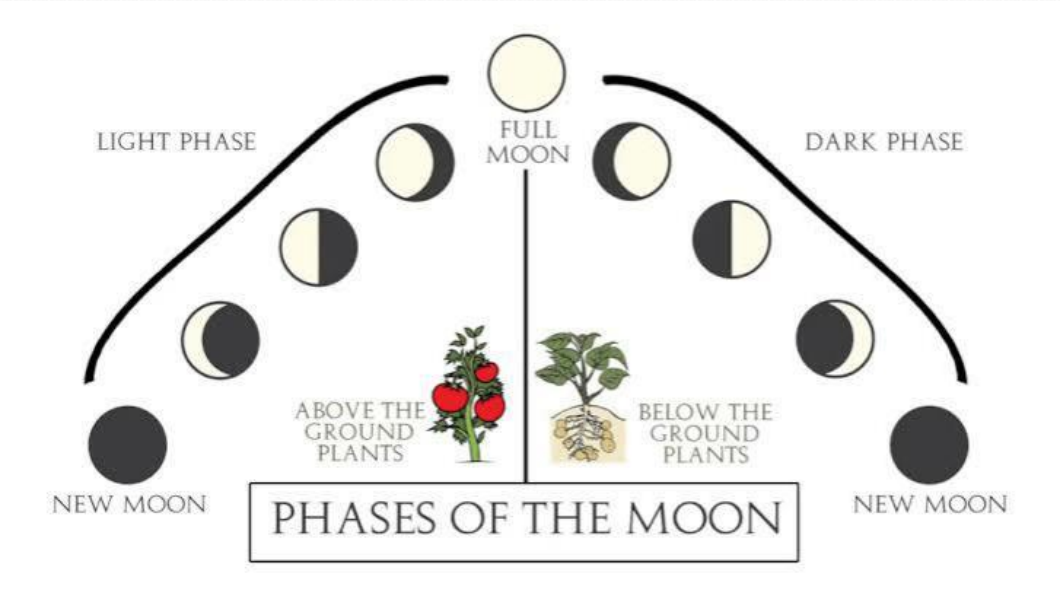
- **Steiner** suggested that the moon's light and gravitational pull influence plant growth. The moon has an elliptical orbit, so its gravity changes during its 28-day cycle.
- When the moon is farther away, root growth improves due to weaker gravity. The moon's gravity also causes ocean tides. For planting, it's best to sow flower, fruit, and vegetable seeds two days before the new moon, as the light and gravity are favorable for growth in the next week.
- During the week leading up to the full moon, the moon's light increases, which boosts leaf growth, but stronger gravity makes it harder for roots to grow. This is when shoots grow well, but roots rest . After the full moon, as the light decreases, foliage growth slows down.
- The weaker gravity helps roots develop, making it a good time to transplant seedlings since their roots are in better conditions to flourish .In last 7 days of lunar cycle , the light decreases but the gravitational pull increases . As a result , foliage as well as the roots rest in the run upto the new moon of the next lunar cycle.


Full
Moon
(at perigee)
New Moon
(at apogee)

The different phases of lunar cycle are,

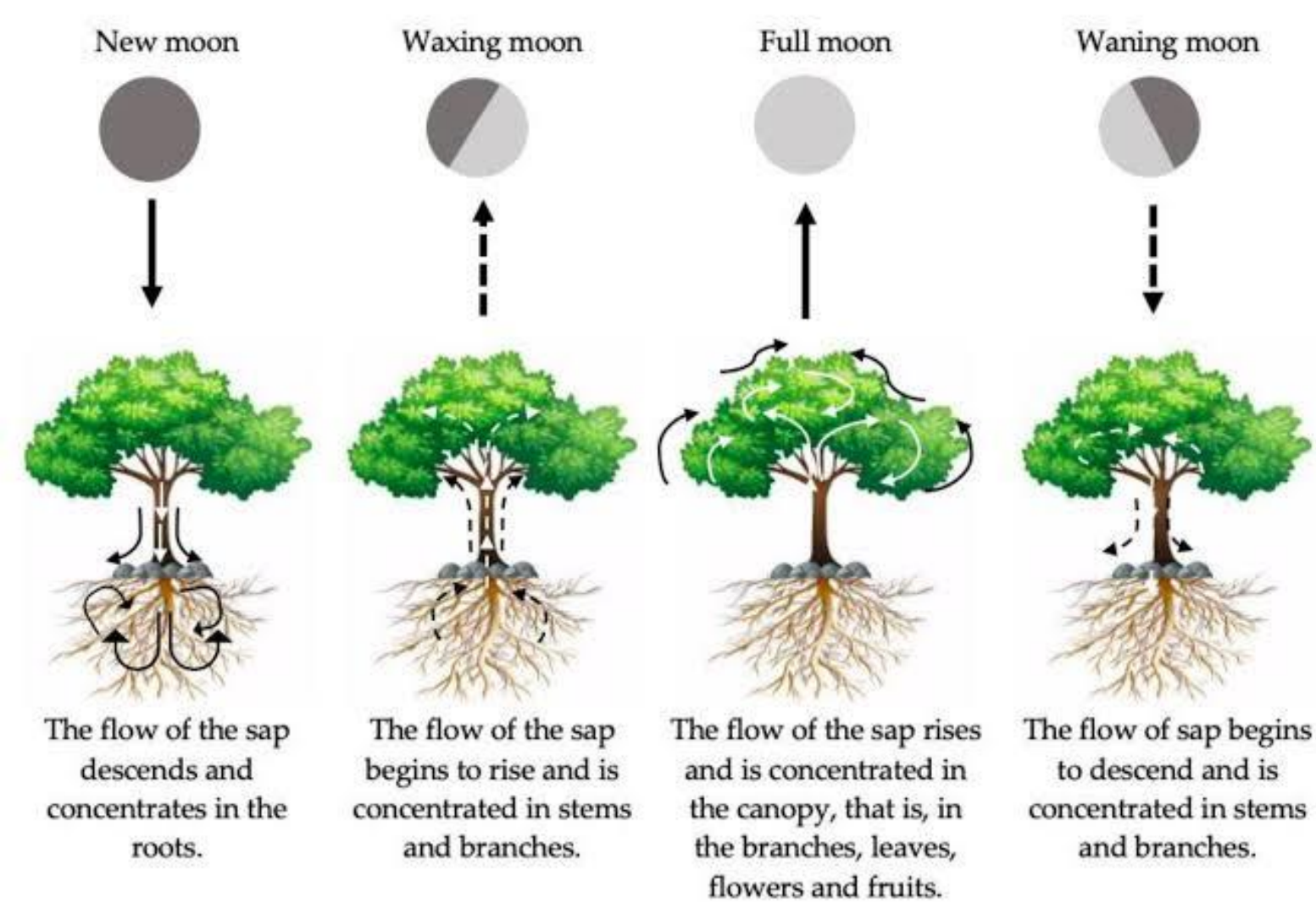
1)Ascending Period: During this period, a greater emphasis is laid on the energy flow from the centre of the earth to the cosmic periphery. This phenomenon is observed in spring tides, and has a correspondence to strength the sap flow in a plant that can be harnessed by the gardener.

2) Descending Period: During this period, lunar energy flows down from the cosmic periphery towards the centre of the earth. These forces work more strongly on the plant parts in the soil.



Aspect	Ascending Moon	Descending Moon
Earth's Activity	Earth is breathing out	Earth is breathing in
Plant Development	Upper parts (shoots) develop	Ground parts (roots) develop
Cosmic Energy	Works above the rhizosphere	Works below the rhizosphere
Seasons	Spring and summer	Autumn and winter
Suitable Activities	Foliar applications, propagation, harvesting, sowing	Root development, transplanting, manure application, harvesting of tuber crops

3) Perigee (Poornima): At perigee, the moon is nearest to the earth, and plants
are more prone to fungal diseases because of high atmospheric moisture.
4) Apogee: At apogee, the moon is farthest from the earth, and this time is
suitable for sowing tuber crops.
5) Rahu: This is the lunar node in ascending period of moon, and is not suitable
for agricultural activities.
6) Ketu: This is the lunar node in descending period of moon, and is not suitable for agricultural activities.


New moon
Waxing moon
Full moon
Waning moon
The flow of the sap descends and concentrates in the roots.
The flow of the sap begins to rise and is concentrated in stems and branches.
The flow of the sap rises and is concentrated in the canopy, that is, in the branches, leaves, flowers and fruits.
The flow of sap begins to descend and is concentrated in stems and branches.

Advantages Biodynamic farming:

- Its yield potentials are equal or better than those harvested after application of recommended doses of agrochemicals.
- It shows continuous improvement in physical, chemical and biological properties of soil.
- It produces quality with respect to nutrition and appearance, and improves shelf-life.
- It is eco-friendly.

Interferences from Biodynamic Systems

Biodynamic system is almost new, but the preliminary observations show encouraging responses, based on which the following interferences are drawn:

- It appears to be sustainable, economic, and eco-friendly.
- It poses a minimum risk of residual toxicity.
- It shows improvement in soil fertility with quality produce including shelf-life.
- It effectively employs micro quantities of cow pit (BD-500 and BD-501) only if the soil is rich in organic matter content.
- It maintains the organic matter content of the soil by incorporation of compost prepared locally from the organic waste by NADEP, Vermi , BD or micro mediated compost.